

House Energy & Technology Committee: Energy Communications Convergence



Kerrick Johnson
Chief Innovation and
Communications Officer
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Roles & responsibilities

VELCO's vision is to create a sustainable Vermont through our people, assets, relationships and operating model.

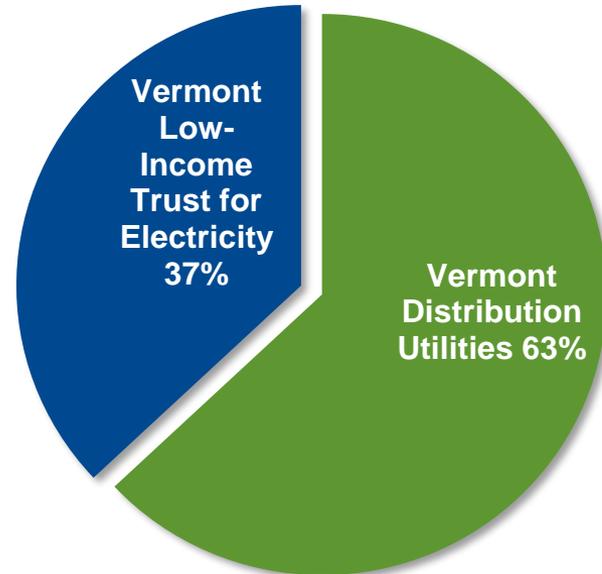
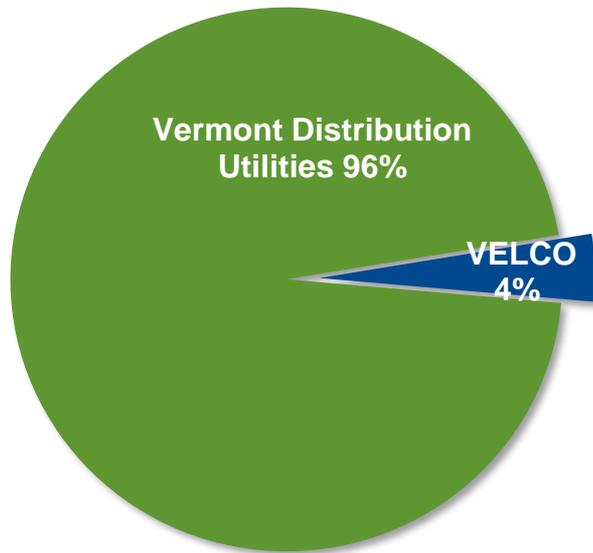
VELCO's role is to ensure transmission system reliability by planning, constructing and maintaining the state's high-voltage electric grid.

VELCO's mission is to serve as a Trusted Partner

Related responsibilities

- Serve as Local Control Center for Vermont grid operations
- Develop and submit Vermont's Long-Range Transmission Plan
- Manage the Vermont System Planning Committee
- Manage Regional Utility Issues Group for Dept. of Public Service

Corporate structure: for-profit that delivers co-op value



Utility Broadband Networks

Alabama: Alabama Power/C-Spire Partnership, Central Alabama Electric Cooperative (Central Access), Cullman Electric Cooperative (Sprout Broadband), Huntsville Utilities, **Sylacauga Utilities Board**, Tombigbee Electric Cooperative (Freedom Fiber), North Alabama Electric Cooperative.

Alaska:

Arkansas: **Clarksville Connected Utilities**, Craighead Electric Cooperative (Empower), North Arkansas Electric Cooperative (NEXT), Ouachita Electric Cooperative (Arkansas Rural Internet Service), Ozarks Electric Cooperative (OzarksGO), South Central Connect (South Central Arkansas Electric Cooperative)

California: Anza Electrical Cooperative (ConnectAnza), **ONE Burbank (Burbank Water and Power)**, Plumas-Sierra Telecommunications, San Luis Valley Rural Electric Coop (Ciello)

Colorado: Delta-Montrose Electric Association, DMEA (Elevate Fiber), Southeast Colorado Power Association (SECOM)

Florida: **GRUCom Fiber Optics (Gainesville Regional Utilities)**

Georgia: Habersham Electric Membership Cooperative (Trailwave)

Illinois: Illinois Electric Cooperative (IllinoisNet.com)

Indiana: NineStar Connect (Central Indiana Power), South Central Indiana Rural Electric Membership Corp., (SCI Fiber), Tipmont Rural EMC,

Iowa: **Cedar Falls Utilities**, Maquoketa Valley Electric Cooperative (MVLink), **Spencer Municipal Utilities, Waverly Utilities**

Kentucky: **OMU Fibernet (Owensboro Municipal Utilities)**

Massachusetts: **HG&E Telecom (Holyoke Gas & Electric Department), Shutesbury Municipal Light Plant, Taunton Municipal Lighting Plant, Whip City Fiber (Westfield Gas & Electric), Windsor Municipal Light Plant**

Michigan: Cloverland Electric Cooperative (Cloverland Electric Cooperative Internet), Great Lakes Energy (TrueStream), Midwest Connections (Midwest Energy Cooperative)

Utility Broadband Networks

Missouri: Barry Electric Cooperative (goBEC), Callaway Electric Cooperative (Callabyte Technology), Co-Mo Electric Cooperative (Co-Mo Connect), Pemiscot-Dunklin Electric Cooperative, Ralls County Electric Cooperative, SEMO Electric Cooperative, Sho-Me Electric Cooperative (Sho-Me Technologies), United Electric Cooperative (United Fiber), **SpringNet (City Utilities of Springfield)**

Minnesota: Mille Lacs Energy Cooperative (MLEC Internet)

Mississippi: Entergy/C Spire partnership

New Mexico: Continental Divide Electric Cooperative (Red Bolt Broadband), Kit Carson Electric Cooperative (Kit Carson Internet)

Nevada: Valley Electric Cooperative Association (Valley Communications Association)

New York: Delaware County Electric Cooperative (Delaware County Broadband Initiative (DCBI)), OEConnect (Otsego Electric Cooperative)

North Carolina: French Broad Electric Membership Corporation (French Broad Fiber), Lumbee River EMC (Bluewave Communications)

Ohio: Consolidated Cooperative (Enlight),

Oklahoma: Lake Region Electric Cooperative (Lake Region Technology & Communications), Northeast Oklahoma Electric Cooperative (Bolt Fiber Optic Services) OEC Fiber (Oklahoma Electric Cooperative)

Oregon: Douglas Electric Cooperative (Douglas Fast Net), **EUGNet (Eugene Water and Electric Board)**, Hood River Electric Cooperative (Communications Access Cooperative, CACHE)

South Carolina: Mid-Carolina Electric Cooperative (Carolina Connect), Tri-County EMC,

South Dakota: Swiftel Communications (Brookings Municipal Utilities)

Tennessee: **BrightRidge (Johnson City Power Board)**, **EPB Fiber Optics**, Gibson Electric Membership Corporation (Gibson Connect), Holston Electric Cooperative (Holston Connect), Jackson County REMC (Jackson Connect), Middle **NU Connect (Newport Utilities)**, Tennessee Electric Membership Corporation, **LightTUBE (Tulahoma Utilities Board)**, Volunteer Electric Cooperative (VEC)

Texas: Bandera Electric Cooperative (BEC Fiber), Grayson-Collin Electric Cooperative (GCEC Telecom), Guadalupe Valley Electric Co-op (GVEC.net), Taylor Electric Cooperative (Access Fiber)

Wisconsin: Chippewa Falls Electric Cooperative (Ntera),

Virginia: BARC Electric Cooperative (BARC Connects), **BVU OptiNet (BVU Authority)**, Central Virginia Electric Cooperative (Firefly), Mecklenburg Electric Cooperative, Prince George Electric Cooperative (RuralBand), Roanoke Electric Cooperative; Dominion Energy Virginia-Prince George Electric Cooperative; Appalachian Power-GigaBeam

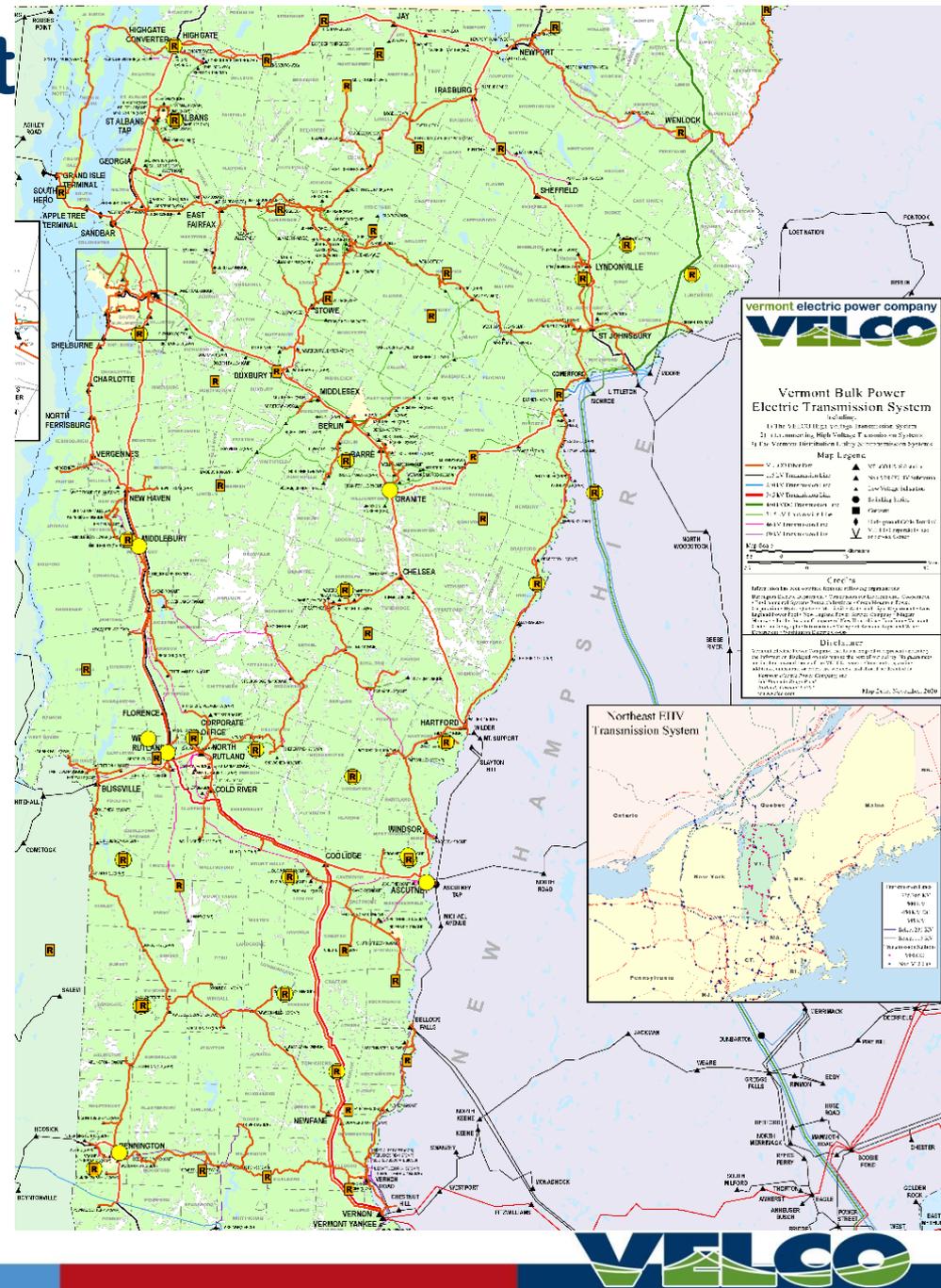
Washington: Orcas Power and Light Cooperative (OPALCO)(Rock Island Communications)



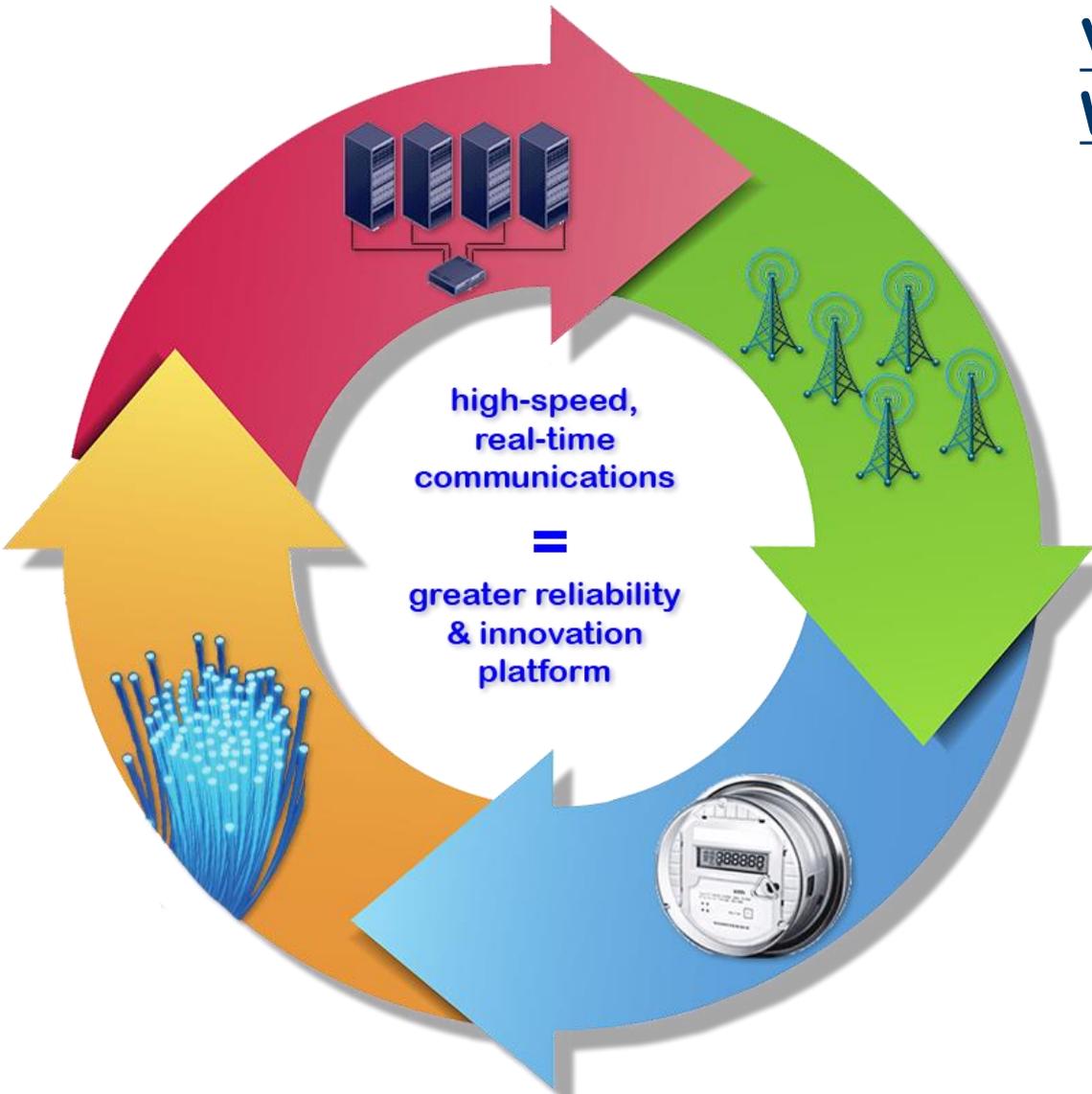
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Statewide infrastructure

- Comprehensive resilient communication network
 - 1,500 Miles of fiber
 - Connecting >350 substations
 - Statewide radio coverage ~98%
 - \$20M annual value: reliability, safety, data security
- Grid Reliability
 - Data backhaul for all distribution utilities
- Real-time operation/other use cases
 - VEC, GMP
 - WEC pilot: asset and network visualization
 - BED data hosting
 - Lyndonville/Stowe peak load tracking
- Data Security



Collaborative convergence



VT as Innovation Workbench

- Fiber optic network
- Radio system
- Smart grid
 - 92-94% smart meters
- High-performance computing cluster—HPCC
- EMP-protected data center
- Successful startup launch by IBM, Boston Consulting, VELCO of analytics company

Mission/Vision work – Reliability Bband Convergence

CARES Act
Assistance



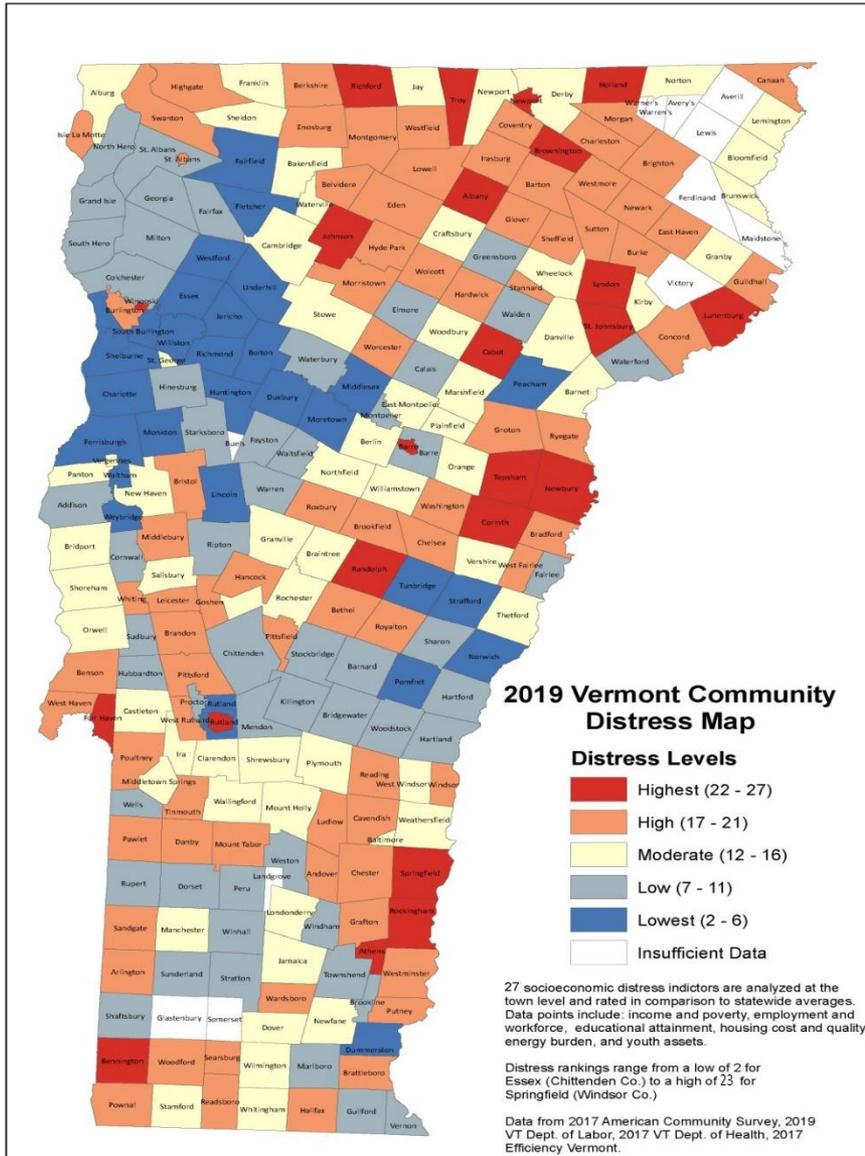
Federal
funding
opportunities



Fiber reliability
project



Vermont Community Foundation - highest distress areas of the state



27 Distress Indicators

Compiled by Vermont Community Foundation and researchers at Middlebury College

Poverty Rates

- Overall
- Childhood (0-18)
- Youth (11-18)*

Income

- Per Capita
- Median Household
- SNAP Usage
- TANF Usage

Income Distribution

- GINI Index*
- Income Disparity*

Educational Attainment

- Less than High School
- High School Only

Local Economy

- Unemployment
- Workforce
- Business Establishments
- Wages

Housing

- Rent
- Homeownership costs
- Median value of owner-occupied housing
- Age of housing*

Youth Assets

- Post high school plans
- Feel valued in the community
- Has an adult to talk to at school*

Energy Burden

- Overall*
- Electrical*
- Thermal*
- Transportation*



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